

Dynamics of Driven Vortices of HTSC and Application to Physics of Friction

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Dynamics and dynamic phase diagram of driven vortices are ones of the most important subjects concerning on the physics and application of high-Tc superconductivity. We investigate I-V characteristics of cuprate superconductors with different types of pinning, anisotropy etc. with particular interest in (1) investigation of the scaling relation proposed quite recently by Luo and Hu, and (2) links to the physics of friction at the solid interface. In terms of the latter interest, we will also discuss the critical current as a function of waiting time. Depending on the different region in the H-T phase diagram of vortices, time dependence of the critical current changes dramatically. These suggest that vortex lattice system can be a very good model system for the study of physics of various different types of friction by choosing the starting point in the H-T phase diagram.

keywords : Dynamics of vortices, friction, I-V characteristics, waiting time dependence